

## WHAT IS CLAIMED IS:

1. A process for preparing an aqueous emulsion polymer comprising providing at least one ethylenically unsaturated monomer and a free radical redox initiator system under emulsion polymerization conditions, said redox initiator system consisting essentially of t-alkyl hydroperoxide, t-alkyl peroxide, or t-alkyl perester wherein the t-alkyl group includes at least 5 Carbon atoms and a non-formaldehyde-forming reducing agent; and effecting the polymerization of at least some of said ethylenically unsaturated monomer.
2. The process of claim 1 wherein said redox initiator system further comprises a redox reaction catalyzing metal salt and, optionally, a metal complexing agent.
3. The process of claim 1 wherein said non-formaldehyde-forming reducing agent is selected from the group consisting of isoascorbic acid, sodium metabisulfite, sodium bisulfite, sodium dithionite, and sodium 2-hydroxy-2-sulfinatoacetic acid.
4. The process of claim 1 wherein the polymerization of at least 95% by weight of said ethylenically unsaturated monomer is effected.
5. A process for reducing the residual ethylenically unsaturated monomer content of an aqueous emulsion polymer comprising contacting said aqueous emulsion polymer with a free radical redox initiator system, said redox initiator system consisting essentially of t-alkyl hydroperoxide, t-alkyl peroxide, or t-alkyl perester wherein the t-alkyl group includes at least 5 Carbon atoms and a non-formaldehyde-forming reducing agent; and effecting the polymerization of at least some of said residual ethylenically unsaturated monomer.

6. The process of claim 5 wherein said redox initiator system further comprises a redox reaction catalyzing metal salt and, optionally, a metal complexing agent.

5 7. The process of claim 5 wherein said non-formaldehyde-forming reducing agent is selected from the group consisting of isoascorbic acid, sodium metabisulfite, sodium bisulfite, sodium dithionite, and sodium 2-hydroxy-2-sulfinatoacetic acid.

10 8. The process of claim 5 wherein the polymerization of at least 90% by weight of said residual ethylenically unsaturated monomer is effected.

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